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BETTER GINNING SERVICE WITH NEW GIN INSTALLATIONS

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Cotton producers continue to get better ginning service every year, either through modernizing existing plants or through building new plants. In the Cotton Belt, slightly more than one hundred new plants were erected in 1939, and the number of new plants in 1940 exceeded that for 1939 ¹/₂. Figure 1 shows the approximate locations of the new gin installations for 1940 -- those completely new throughout, as well as those brought up to date.

Sixty-five percent of the new outfits were installed in the States bordering the Mississippi River; 20 percent in the Southeastern States; and 15 percent in the Southwestern States. In the Mississippi Valley, the new gins represented 2.5 percent of the active gins in 1940, but in each of the other two areas they accounted for less than 1 percent of the gins in operation. Surveys made by members of the staff of the U. S. Cotton Ginning Laboratory of almost 100 of the new gins showed that one-half of them were new installations on new sites; about 10 percent took the place of old outfits that burned in 1939; and the remainder were replacements of badly worn or obsolete equipment.

A much greater percentage of the gins placed in the Mississippi Valley in 1940 were installed as new ventures by individuals or groups of producers than was the case with gins similarly built in the other areas. Of the new gins studied in the Cotton Belt, 51 percent were privately owned by ginners primarily for custom ginning; 17 percent were owned by groups of cotton producers for ginning their own cotton, as well as doing custom ginning; and 32 percent, by corporations in the business chiefly for performing custom ginning.

For approximately one-half of the total number of new outfits surveyed in 1940, the main building was of all-steel construction. Next in popularity was steel covering and wood framing, which represented one-third of the plants. The

¹/₂ In these compilations, a double battery gin is counted as two plants; and outfits, in which the gin stands, feeders, distributor, and all auxiliary equipment except the press, condenser, and power unit is new, are classified as new installations along with completely new plants.

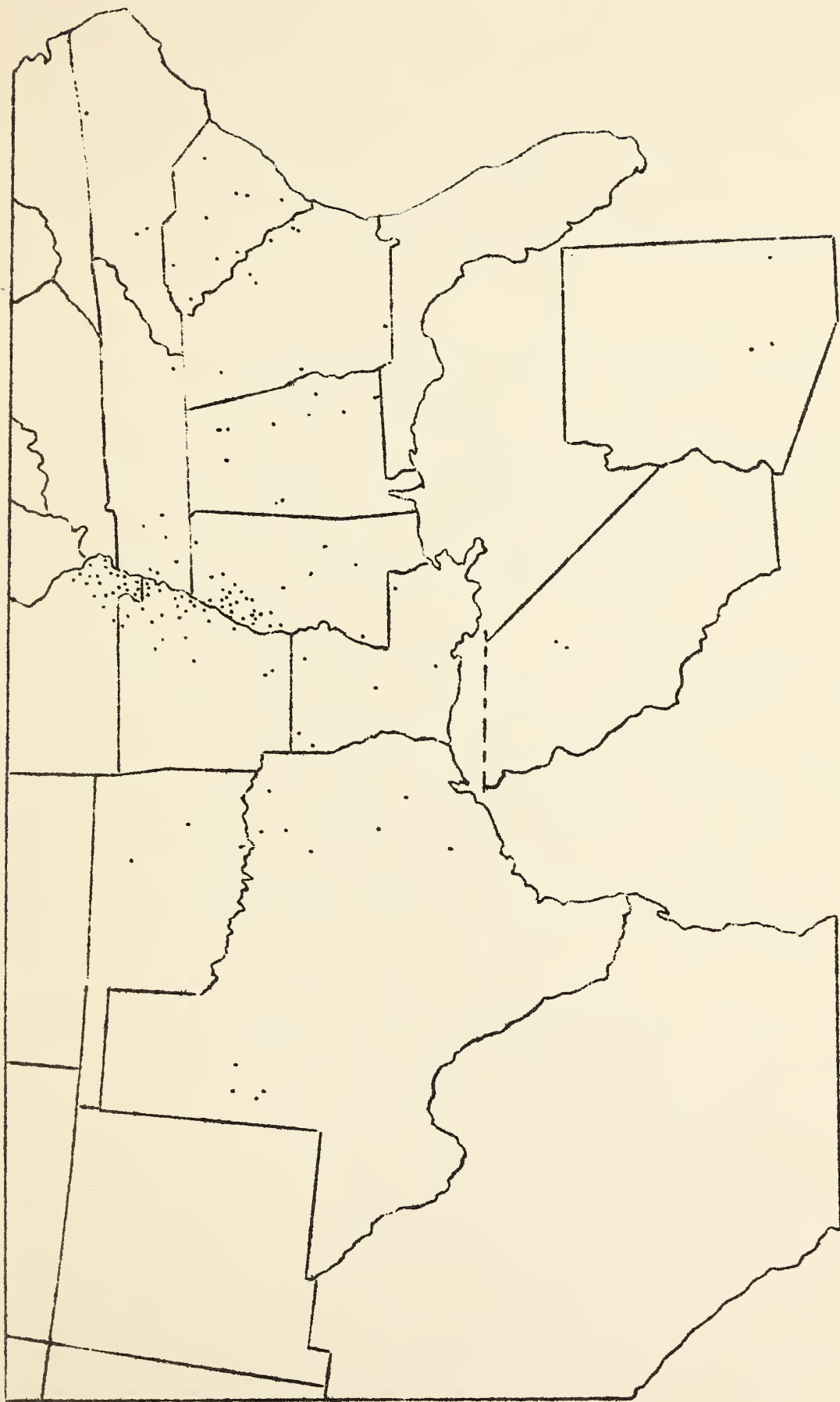


FIGURE 1 - Approximate locations of new gin installations in the United States, Season 1940-41.



remaining outfits were installed in buildings of concrete, brick, or wood construction. Practically all the buildings were of one-story design. In almost two-thirds of these buildings, the motive power units and fans were in a separate compartment from the main ginning machinery installation and at the opposite end of the building from the press. The power unit was belted directly to the saw shaft in nine out of ten gins. More than half of the gins were powered by Diesel engines; about one-third, by electric motors; and the remaining gins, by gas engines or steam plants.

With respect to ginning machinery employed in the new plants, 63 percent of the plants were equipped with facilities for conditioning and drying cotton, and almost all of them had extractor-cleaner-feeders for cleaning the cotton. Over two-thirds of the gins surveyed were equipped with the larger sized extractor-cleaner-feeder units, while the remainder used the size that fits into approximately the space required for a big drum feeder. The trend in new outfits is toward more extensive cleaning and extracting facilities ahead of the gin stands. Less than 10 percent of the new gins studied in the Southeastern States were equipped with overhead cleaners, but almost one-half of them in the Mississippi Valley States had them, and all except one of those inspected in the Southwestern States used them along with overhead extractors.

In the survey of drying operations, it was found that an average of 88 percent of the cotton ginned by the new gins reporting was conditioned prior to ginning. The reports from ginners showed average ginning capacity increases of over 20 percent on the moist cotton and about 5 percent on the dry cotton, which were associated with the handling of the seed cotton through the conditioning and drying units. Based on these reports, bale value was increased an average of almost \$4 with green, damp, or wet cotton and \$1 with dry cotton as a result of conditioning and cleaning the cotton and improving its grade. The fuel costs for the different heating units averaged 15 cents per bale. Various sources of heat were used in the drying outfits of the new plants; but over half of them were equipped with gas-fired furnaces, and one-third employed steam to provide the heat. Eight percent had engine waste heat recovery units and 6 percent had oil-burning furnaces.

Another very evident contributor to good ginning in the new plants was the high speed (600 to 700 revolutions per minute) at which the gin-saws were operated to provide looser seed rolls. The saw speeds averaged about 660 revolutions per minute. This was at least 125 revolutions per minute higher than the average for other representative gins surveyed during the 1940 season. Practically all the new gins, or 96 percent, operated with loose seed rolls as compared with 65 percent for the older gins studied. Almost three-fourths of the new gins surveyed were of the air-blast type. Only about 8 percent of the new systems were 2-stand outfits; 40 percent were 3-stand, and another 40 percent were 4-stand plants; the remainder was 5-stand installations. In a few of the 3- and 4-stand plants the stands were arranged face to face in one building, or were double-battery outfits.

Other features of the new gins, with which better capacity, turnout and lint quality are associated, are improved designs of gin-saw teeth and roll boxes. Better regulation and more precision in control of the rate of feeding the cotton to the gin stands are also in evidence in the modern gins.

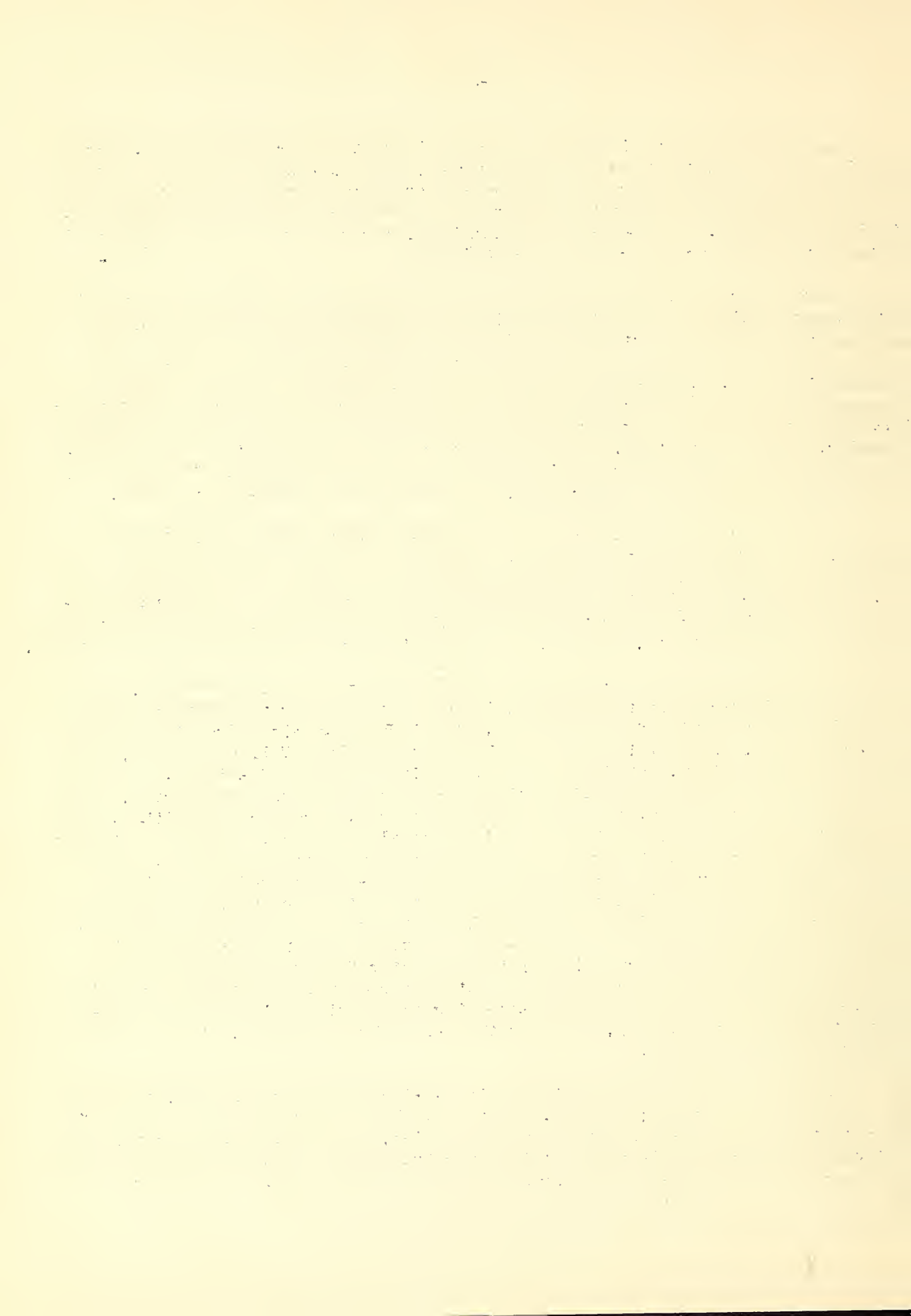
As a result of the increased interest in cotton improvement, and in preservation of the purity of seed at cotton gins, over one-third of the gins examined had systems for handling pure seed -- either of the vacuum blow method or the belt system under the stands for preventing the mixing of seed of different varieties at the gin. In the entire Cotton Belt, however, only a very small percentage of all the active gins are so equipped.

Most new gins are conveniently arranged inside and outside, and properly lighted and ventilated, either artificially or naturally. The completely new outfits have direct-connected drives for the stands and thus the machines are more accessible than are the old outfits with independent saw and brush, and line shaft drives. Presses now have safer door mechanisms than have older presses, and are side-swing in design. Four out of five of the gins studied had all-steel presses, and slightly more than half of the presses were of the down-pressing, single-story type. Only a few of the plants employ the long used up-draft condenser, the trend now being toward the side-draft type. Over one-half of the plants employed the side-draft, and one-third the down-draft method.

Many new gins are equipped with fan inlet controls for regulating air volumes, and economizing on fan power. In most cases, air-blast pressure gauges are standard equipment for indicating the pressures at the air-blast nozzle. Furthermore, indicating thermometers are extensively used for manual control of the drying air temperature at the inlet of the driers. In some of the latest drier developments, however, the heat units are thermostatically controlled.

In addition to the new saw-gin installations previously described, there were 6 new roller-gin plants installed in the western irrigated section of the Cotton Belt as a result of the increased plantings of American-Egyptian cotton of the SxP variety. One outfit was installed in the El Paso Valley of Texas, also one in the Gila Valley, and four in the Salt River Valley, of Arizona. The gin stands in three of these new roller ginning plants were newly constructed, but in the others they were rebuilt units brought up to good mechanical condition. The buildings housing all these gins were of all-steel design and embraced similarly constructed seed-cotton storage houses of substantial storage capacity. Each of these outfits was equipped with large-sized cleaner-extractor-feeder units of sufficient capacity to clean the cotton as fast as it was ginned. Generally one extractor-feeder unit would handle all the cotton ginned by 6 to 8 stands. A drying attachment was used in conditioning the cotton for one battery of gin stands in only one of the gin plants; the extractor feeders were supplemented with cylinder cleaners for cleaning the cotton for only one battery of gins in one plant, and for two in another. According to the ginners' estimates, one-third of the cotton was damp, and over three-fourths was trashy, at the time of ginning in the new plants.

All these outfits were equipped with 40-inch roller gin stands; three had 12 stands; two, 16 stands; and one, 32 stands. The roller covering of four of the outfits was of all-composition rubber packing, spool-wound on the core, and that of two others was alternate strips of walrus hide and rubber packing wound in a spiral of one complete turn from end to end on the core. The average



roller speed for the different plants was 120 revolutions per minute. For operating the moving knife, the cranks in two plants and the eccentrics in four plants averaged, respectively, 650 and 720 revolutions per minute in speed. Based on estimates made by the ginners, the new plants ginned a total of about 15,000 bales of SxP cotton, and the ginnings of the individual plants averaged about 150 bales per stand. In ginning capacity, the new gins in the Salt River Valley averaged about 40 pounds of lint per stand per hour. The gins in the other valleys showed better capacity than these gins because, among other things, the better turnout of the cotton grown in these valleys contributed to faster ginning.

All the new plants employed single-box presses for receiving the ginned lint in manual charges. The presses in five plants were of wooden construction, and the press in one outfit was of all-steel design.

1. The first part of the document is a letter from the President of the United States to the Congress, dated January 3, 1862. It is a very important document, as it contains the President's annual message to Congress. The letter is written in a formal, dignified style, and it is one of the most important documents in the history of the United States. It is a document that has been read and studied by many generations of Americans, and it is a document that has shaped the course of the nation's history.

2. The second part of the document is a letter from the Secretary of the Interior to the President, dated January 10, 1862. It is a very important document, as it contains the Secretary's report to the President on the state of the Department of the Interior. The letter is written in a formal, dignified style, and it is one of the most important documents in the history of the United States. It is a document that has been read and studied by many generations of Americans, and it is a document that has shaped the course of the nation's history.